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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/725,476	11/30/2000	Sorcha O'Callaghan	922-117	1685

7590 08/20/2004

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Arlington, VA 22201-4714

EXAMINER
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BATES, KEVIN T

ART UNIT	PAPER NUMBER
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2155

DATE MAILED: 08/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/725,476	<b>Applicant(s)</b> O'CALLAGHAN ET AL.	
	<b>Examiner</b> Kevin Bates	<b>Art Unit</b> 2155	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 14 May 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |                                                                                                                        |                                                                                         |
|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                            | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____                                                |

### **DETAILED ACTION**

This Office Action is in response to a communication made on May 14, 2004.

Claims 1-14 are pending in this application.

#### ***Response to Amendment***

#### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 1 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kerr (6590894) in view of Asano (6633902).**

Regarding claim 1, Kerr discloses that a network unit (Column 1, lines 51 – 52) which includes a look-up engine for performing an address look-up in response to a key including a network address pair in a packet to obtain forwarding data for said packet (Column 4, lines 4 – 10; Column 3, lines 19 – 23); means for monitoring conversations defined by network address pairs in packets received by the unit to obtain measures of traffic flow for said conversations (Column 5, lines 13 – 17); a cache memory for storing entries accessible by network address pairs and enabling forwarding data to be obtained for entries in the cache (Column 4, lines 55 – 57); and a cache controller operative: (i) to cause in response to a look-up request a determination whether the address pair in a packet is held in the cache (Column 4, lines 8 – 10) (ii) to allow the look-up engine to perform the address look-up when the address pair in said packet is

not held in the cache (Column 4, lines 5 – 7), but Kerr does not explicitly indicate that (iii) updating said cache so as to displace entries associated with relatively low measures of traffic flow by entries associated with relatively high measures of traffic flow (Column 6, lines 20 – 22). Asano teaches of a cache in network node and that the cache's replacement policy includes updating said cache so as to displace entries associated with relatively low measures of traffic flow by entries associated with relatively high measures of traffic flow (Column 2, lines 49 – 57; Column 9, lines 31 – 34; Column 8, lines 20 – 22). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use Asano's teaching of cache replacement in Dietz's system in order to allow the network node to achieve a higher level of cache management and become more effective (Column 9, lines 45 – 47; Column 10, lines 47 – 52).

Regarding claim 4, Kerr in combination with Asano discloses that said look-up engine is organized to perform a trie search (Kerr, Column 7, lines 5 – 20).

**Claims 2, 3, and 5-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kerr (6590894) in view of Asano (6633902) as applied to claims 1 and 4 above, and further in view of Kalkunte (6717951).**

Regarding claim 2, Kerr in combination with Asano discloses that the cache controller is operative, when the address pair of the packet is not held in the cache, to compare the measure of traffic flow with a threshold and to insert the address pair as a new entry in the cache if the measure exceeds the threshold (Asano, Column 9, lines 13 – 24) and is operative when the address pair of the packet is held in the cache to

determine whether the said measure exceeds said threshold (Asano, Column 8, lines 1 – 8) but Kerr in combination with Asano does not explicitly indicate to increase said threshold. Kalkunte teaches a cache based routing system which has a threshold that increases when flows are inserted into the cache (Column 6, lines 7 – 12; lines 17 – 25). It would have been obvious to one of ordinary skill in the art at the time the invention was made to include Kalkunte's teachings of raising the thresholds as more packets are placed in the cache so that the cache replacement policy in Kerr's system allows for thresholds based on the application that the flow belongs to and the current traffic conditions are factors into deciding which flows are more important and need to be the cache (Column 6, lines 40 – 54).

Regarding claim 3, Kerr in view of Asano and Kalkunte discloses removing the cached entries with the lowest packets per time interval by increasing standards and times so that the lower performers are forced out of the cache as the higher performers are detected (Kalkunte, Column 5, lines 33 – 50).

Regarding claims 5 and 12, Kerr discloses a network unit (Column 1, lines 51 – 52) which includes: a look-up engine for performing an address look-up in response to a key including a network address pair in a packet to obtain forwarding data for said packet (Column 4, lines 4 – 10; Column 3, lines 19 – 23); means for monitoring conversations defined by network address pairs in packets received by the unit to obtain measures of traffic flow for said conversations (Column 5, lines 13 – 17); a cache memory for storing entries accessible by network address pairs and enabling forwarding data to be obtained for entries in the cache; and a cache controller operative: (i) to

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cause in response to a look-up request a determination whether the address pair in a packet is held in the cache (Column 4, lines 8 – 10); (ii) to allow the look-up engine to perform the address look-up when the address pair in said packet is not held in the cache (Column 4, lines 5 – 7), but Kerr does not explicitly indicate that (iii) (iii) when the address pair of the packet is not held in the cache, to compare the measure of traffic flow with a threshold and to insert the address pair as a new entry in the cache if the measure exceeds the threshold (Column 6, lines 20 – 22). Asano teaches of a cache in network node and that the cache's replacement policy includes updating said cache so as to displace entries associated with relatively low measures of traffic flow by entries associated with relatively high measures of traffic flow (Column 2, lines 49 – 57; Column 9, lines 31 – 34; Column 8, lines 20 – 22). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use Asano's teaching of cache replacement in Dietz's system in order to allow the network node to achieve a higher level of cache management and become more effective (Column 9, lines 45 – 47; Column 10, lines 47 – 52), but Kerr also does not explicitly indicate to increase said threshold. Kalkunte teaches a cache based routing system which has a threshold that increases when flows are inserted into the cache (Column 6, lines 7 – 12; lines 17 – 25). It would have been obvious to one of ordinary skill in the art at the time the invention was made to include Kalkunte's teachings of raising the thresholds as more packets are placed in the cache so that the cache replacement policy in Kerr's system allows for thresholds based on the application that the flow belongs to and the current traffic

conditions are factors into deciding which flows are more important and need to be the cache (Column 6, lines 40 – 54).

Regarding claim 8, the Kerr in combination with Asano and Kalkunte discloses a method for operating a network unit (Kerr, Column 1, lines 51 – 52), which method includes: performing an address look-up in response to a key including a network address pair in a packet to obtain forwarding data for said packet (Kerr, Column 4, lines 4 – 10; Column 3, lines 19 – 23); monitoring conversations defined by network address pairs in packets received by the unit to obtain measures of traffic flow for said conversations (Kerr, Column 5, lines 13 – 17); storing entries in a cache memory that one accessible by network address pairs and enabling forwarding data to be obtained for entries in the cache; causing, in response to a look-up request, a determination whether the address pair in a packet is held in the cache (Kerr, Column 4, lines 8 – 10); performing an address look-up when the address pair in said packet is not held in the cache (Kerr, Column 4, lines 5 – 7); and updating said cache so as to displace entries associated with relatively low measures of traffic flow by entries associated with relatively high measures of traffic flow (Asano, Column 6, lines 20 – 22) by removing the cached entries with the lowest packets per time interval by increasing standards and times so that the lower performers are forced out of the cache as the higher performers are detected (Kalkunte, Column 5, lines 33 – 50).

Regarding claims 3, 6, 10, and 13, Kerr in view of Asano and Kalkunte discloses removing the cached entries with the lowest packets per time interval by increasing

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standards and times so that the lower performers are forced out of the cache as the higher performers are detected (Column 5, lines 33 – 50).

Regarding claims 7, 11, and 14, Kerr in combination with Asano discloses that said look-up engine is organized to perform a trie search (Kerr, Column 7, lines 5 – 20).

Regarding claim 9, Kerr in combination with Asano discloses that the cache controller is operative, when the address pair of the packet is not held in the cache, to compare the measure of traffic flow with a threshold and to insert the address pair as a new entry in the cache if the measure exceeds the threshold (Asano, Column 9, lines 13 – 24) and is operative when the address pair of the packet is held in the cache to determine whether the said measure exceeds said threshold (Asano, Column 8, lines 1 – 8) but Kerr in combination with Asano does not explicitly indicate to increase said threshold. Kalkunte teaches a cache based routing system which has a threshold that increases when flows are inserted into the cache (Column 6, lines 7 – 12; lines 17 – 25). It would have been obvious to one of ordinary skill in the art at the time the invention was made in include Kalkunte's teachings of raising the thresholds as more packets are placed in the cache so that the cache replacement policy in Kerr's system allows for thresholds based on the application that the flow belongs to and the current traffic conditions are factors into deciding which flows are more important and need to be the cache (Column 6, lines 40 – 54).

### ***Response to Arguments***

Applicant's arguments with respect to claims 1 - 14 have been considered but are moot in view of the new ground(s) of rejection.



***Prior Art***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U. S. Patent No. 5566170 issued to Bakke, because it discloses a forwarding network node that accesses a cache using the address pair to obtain forwarding data.

U. S. Patent No. 6401171 issued to Klein, because it discloses looking up a packet header in cache.

U. S. Patent No. 6512766 issued to Wilford, because it discloses looking up headers in a cache.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Bates whose telephone number is (703) 605-0633. The examiner can normally be reached on 8 am - 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hosain Alam can be reached on (703) 308-6662. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KB

KB  
August 16, 2004



HOSAIN ALAM  
SUPERVISORY PATENT EXAMINER